MPAR-WG Draft Metrics Recommendations for HQ

As Adopted as Recommendations by the MPAR-WG

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- Draft General Recommendations
- Draft Common Metric-by-Metric Recommendations
- Potential New Common Metrics Recommendations
- Examples of Possible Project-Specific Metrics
- Examples of Potential Impact Metrics

Draft General Recommendations

- **Metrics "Mission Statement":**

  To measure the success of each project in meeting its stated goals and objectives, to show the role and contribution of each project to the NASA science, application, and education programs, and to enable an overall assessment of the success of programs such as REASoN / ACCESS and their contribution to NASA's goals.

  This implies that the metrics will be a mixture of project-specific metrics and common metrics, overall measures with sufficient cross-project commonality, and all reported by most if not all projects, to allow assessment of the REASoN / Access (etc.) program(s) as a whole.

- **Optional Project-Specific Metrics:**

  Projects may add one or more Project-Specific, Project-defined metrics, to allow each Project to add metrics that it determines best measure its performance against its objectives.

Metric 1 – Distinct Users - Baseline

Baseline Definition:

The number of distinct individual users (based on non-duplicated IP addresses) who request and/or receive products, services and/or other information during the reporting period.

Draft Recommendation:

The number of distinct individual users who request and receive products, services and/or other information during the reporting period *by any means.*

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 2 – Distinct Users by Class

Baseline Definition:

Classes of users who obtain products and services from the project. The metric will show the relative proportion of users accessing data and services from:

a) first-tier domains: .com, .edu, .gov, .net, .mil, .org, summary of foreign countries, and unresolved ,

b) second-tier domains, such as “nasa.gov”, “unm.edu”, etc.

Draft Recommendation:

Classes of users who obtain products and services from the project. The metric will show the *numbers* of *distinct* users accessing data and services from *classes identified by* internet domains *or other identification that can be related to domain classes:*

a) and b) as above.

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 4A – Product Types Available

Baseline Definition:

A product type refers to a collection of 'products' of the same type such as "sea surface temperature" products. The project may add many or few product types through time but these should be tracked independent of the number of 'products' delivered. (This metric is not expected to change frequently and may not require updates on a monthly basis).

Draft Recommendation:

A product type refers to a collection of 'products' of the same type such as "sea surface temperature" products*, tools or other capabilities, and/or types of separately available information products that a project such as a REASoN or ACCESS provides to its users. The intent is to capture the user view of the product types, types of information and/or tools and provided by the project.*

The project may add many or few product types through time but these should be tracked independent of the number of 'products' delivered. (This metric is not expected to change frequently and may not require updates on a monthly basis).

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 4B – *Service* Types Available

Draft Recommendation:

A *service* type refers to a *separately accessible web service or other capability, and/or types of separately available services of any kind that a REASoN / ACCESS Project provides to its users.* The intent is to capture the user view of the *services and capabilities* provided by the project.

The project may add many or few *service* types through time but these should be tracked independent of the number of *instances of services provided.* (This metric is not expected to change frequently and may not require updates on a monthly basis).

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 3A – Products Delivered

Baseline Definition:

The number of separately cataloged and ordered data or information products delivered to users during the reporting period (by project-defined product ID). A 'product' may consist of a number of items or files that comprise a single item in a product catalog or inventory; our intent is to capture the user view of the products provided by the project.

Draft Recommendation:

The number of separately cataloged and ordered, *dynamically produced, or otherwise available* data or information products delivered, *and/or or tools provided* to users during the reporting period by a project such as a REASoN or ACCESS.

A 'product' *(an instance of a metric 4 product type)* is 1) an item (pre-prepared or produced on demand) *listed* in a product catalog,inventory or menu. The intent is to capture the user view of the data *products, information* products *and/or tools* provided by the project.

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 3B – Services Provided

Recommendation: Services Provided Metric

The number of services provided to users during the reporting period by a project such as a REASoN or ACCESS. A service provided is a session with, or invocation of, an on-line service or capability selectable from a general menu of available services or capabilities, or an instance of a service otherwise provided (e.g. an exhibit, workshop or presentation).

The intent is to capture the user view of the *information services and capabilities* provided by the project.

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 5 – Volume of Data Distributed

Current Baseline Definition:

The volume of data and/or data products distributed to users during the reporting period (in GB or TB as appropriate).

Draft Recommendation:

The volume of data and/or data products *and/or information provided as web downloads or otherwise* distributed to users during the reporting period (in *MB* , GB or TB as appropriate, *to three significant digits precision).*

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 6 – Volume of Data Available

Current Baseline Definition:

The total cumulative volume, as of the end of the reporting period, of data and products held by the project and available to researchers and other users (GB or TB). This number can include data that is not on-line but is available through other means.

Draft Recommendation:

The total cumulative volume, as of the end of the reporting period, of data and products held by the project and available to researchers and other users (*MB,* GB or TB *to three significant digits*). This number can include data that is not on-line but is available through other means. *For some projects, not holding digital data, the proper answer is 'not applicable'.*

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 7 – Delivery Time of Products to Users

Current Baseline Definition:

Response time for filling user requests during the reporting period. Averaged and standard deviation summary times are to be collected for both electronic (including subscription services) and physical hard media transfers.

Draft Recommendation 1:

Eliminate it! Data distribution by media on the decline, on-line services consistently fast, not meaningful for non-IT based distribution. Would require GPRA change.

Draft Recommendation 2:

Response time for filling user requests during the reporting period. Average and standard deviation summary times are to be collected for both electronic (including subscription services) and physical hard media transfers. *In cases where computed values can not be obtained, a qualitative approximation (e.g. "seconds", "minutes" for average, or "little deviation from average" or "occasional significant deviation from average" with explanatory comment "not computed" or equivalent).*

MPAR-WG adopted, as a draft recommendation to NASA HQ, that metric 7 be eliminated (noting that a project could choose to report it). But if metric 7 can not be eliminated, MPAR-WG adopts a fall-back recommendation that it be reworded as shown above (draft recommendation 2).

Metric 8 – Support for Science Focus Areas

Current Baseline Definition:

The REASoN projects will include a quantitative summary of the data products supporting one or more of NASA's science focus areas, and report any changes at the next monthly metrics submission. The focus areas are: weather, climate change and variability, atmospheric composition, water and energy cycle, Earth surface and interior, and carbon cycle and ecosystems.

Draft Recommendation:

The REASoN */ Access* projects will include a quantitative summary of the data products supporting one or more of NASA's science focus areas*, indicating which area(s) the project's services are intended to support, and separately which areas its services could support,* and report any changes at the next monthly metrics submission. The focus areas are: weather, climate change and variability, atmospheric composition, water and energy cycle, Earth surface and interior, and carbon cycle and ecosystems.

NOTE: A workable meaning of quantitative is needed: suggest a list of the Project's products / services / tools indicating which areas each is intended to support and which it could support.

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 9 – Support for Applications Areas

Current Baseline Definition:

The REASoN projects will include a quantitative summary of the data products supporting one or more of NASA's Applications, and report any changes at the next monthly metrics submission. The 12 applications areas are: agricultural efficiency, air quality, aviation safety, carbon management, coastal management, ecosystems, disaster preparedness, energy forecasting, homeland security, invasive species, public health, and water management.

Draft Recommendation:

The REASoN */ Access* projects will include a quantitative summary of the data products supporting one or more of NASA's Applications, *indicating which application areas(s) the project's services are intended to support, and separately which areas its services could support* and report any changes at the next monthly metrics submission. The 12 applications areas are: agricultural efficiency, air quality, aviation safety, carbon management, coastal management, ecosystems, disaster preparedness, energy forecasting, homeland security, invasive species, public health, and water management.

NOTE: A workable 'quantitative' is needed: suggest a list of the Project's products / services / tools indicating which areas each is intended and which it could support.

MPAR-WG adopted this as a draft recommendation to NASA HQ.

Metric 10 – Support for Education Initiatives

Current Baseline Definition:

In partnership with the Study Manager the REASoN project will submit data pertaining to the adoption and use of educational products by noted audience categories (to be determined by project and study manager). These groups can include higher education, K-12, museums, informal education, and others as appropriate.

Draft Recommendation:

The project will report Specific Audience Reached (K-12, Post Secondary, Informal Science, Minority), Communications Method (In person, Active Internet, and/or Passive Internet (web site access)), Type of Product (Data, Enhanced Data,Tool – new or existing, Training, Career Activities, Public Engagement, Educational materials, Services (data access)).

Note: Suggests multi-part Metric 10: 10.1 Specific Audience Reached (numbers from group(s) selected from list), 10.2 Communications Method (numbers for methods selected from list), 10.3 Type of Product (select from list).

MPAR-WG adopted this as a draft recommendation for NASA HQ pending development of final form by Glen Schuster and John Pickle in consultation with Paula Coble and Ming-Ying Wei.

Potential New Common Metrics

- Number of publications resulting from data usage:

  The project will report the number of publications (peer reviewed, trade magazines, conference proceedings and others) citing the use of the project's data, information, or services.

  But, this has proven to be a wily, tough opponent, so far undefeated.

  Can a REASoN project be expected to tackle this? Might it not better be tackled from the center for all projects - one NASA arm on publications, authors, other author-funding agencies like NSF?

  Alternative - when a project does capture a good citation(s), report as impact metric.

- MPAR-WG did not adopt this – recommends projects use the alternative indicated.

- Progress against project milestones:

  The project will report accomplishment of milestones identified in its proposal or project plan. (Presumes the existence of agreed milestones.)

- MPAR-WG did not adopt this, it is covered by e-Books.

More Detailed REASoN Ideas on Publications and Presentations

- Project-related formal *presentations* at meetings of learned societies (provide complete citation)
- Project-related *publication* of papers presented at meetings of learned societies (complete citation)
- Project-related *presentations* at popular venues (e.g., town meeting) (complete citation)
- Project-related *publication* at popular outlets (e.g., newspapers, magazines) (complete citation)
- *Manuscripts submitted* to peer-reviewed scientific journals (complete citation)
- *Articles published* in peer-reviewed scientific journals (complete citation)
- Project-related contributions to *chapters* in books (complete citation)
- Project-related *books* or *monographs* (complete citation)
- Unpublished *Masters* thesis completed based on REASoN funding (complete citation)
- Unpublished *Doctoral* dissertations completed with REASoN funding (complete citation)
- Interaction with major user groups or agencies (FEMA, DOE, EPA, etc. e.g. important mid-and high-level briefings (date, place, subject matter)
- Interaction with regional/local user groups or agencies (city, state, regional council of governments) e.g. important mid- and high-level briefings (date, place, subject matter)

MPOAR-WG Note: These can covered by e-Books, and will be conveyed to Karen Moe, e-Books lead.

Examples of Potential Project-Specific Metrics -1

These examples will be included with metrics guidance to suggest the sort of project-specific metrics a project might choose to define for itself and report:

- OPeNDAP server sites
  - How many institutions are using OPeNDAP overall?
  - How many institutions are using OPeNDAP to distribute ocean data?
  - How much SST data has been sent to users using OPeNDAP?
  - Metrics for downloads of OPeNDAP software elements.

- GLCF-Unique
  - Large volume and variability
  - Classroom usage
  - Research feeder service
  - Customer Service
  - Data Mirrors, Data Grids, OPeNDAP (Data Sharing Operations)
  - Extra Achievements – items that are not part of the REASoN proposal obligations

Examples of Potential Project-Specific Metrics - 2

- Education
  - Number of teachers impacted – school districts, subjects, grade level, underrepresented audience;
  - Number of hours of teacher training provided;
  - Number of students, time working on project, indicators of success
  - Administrators' support to teachers; how have we helped teachers demonstrate that we are meeting their need?
  - Which schools have made materials part of curriculum? Have more teachers shown desire to be trained? Publications
  - Percentage of Earth science content in the curricula – an integrated measure of success (across REASoN projects)

- Decision Support Systems:
  - Document through user and especially peer-review contributions that result in improved decision support systems that a) improve the quality of life, b) save lives, and/or c) help sustain the environment.

Examples of Potential Impact Metrics

These examples will be included with metrics guidance to suggest the sort of impact metrics a project might choose to report:

- **Improvement of Effectiveness for Users**
  - Examples of how Project's services made life easier for its users:

    1) Subsetting that reduces data flow to users to just the data that users actually need.

    2) Custom processing that provides the user with product that meets needs without further (or minimizes the need for further) processing by the user, e.g. reprojecting / remapping, plotting of parameters, etc.

  A variation of this as common metric for Access activities?

- **Examples of Customer e-mails**
  - Presumably testimonials to beneficial impact of project on the user.

- **Special project publications / presentations to significant audiences**
  - for which an impact can be described.

- **Significant accomplishments**
  - for which an impact on a user or group of users, or contribution to a NASA goal or objective, can be described.

- **Extra Achievements that are above and beyond what Project proposed, e.g.:**
  - Impact of OPeNDAP on NASA future data and information system planning;
  - Unique types of usage of OPeNDAP (e.g., internal use by EOSDIS), beyond the scope of the project's proposal.